In the table, there is an information about the production (y)
and about investments in 1000 CZK (x) in 12 years.
in a firm.

a) Find a linear regression function modelling dependence of a production in the am

b) By using of the coefficient of determinarion $R^2$ evaluate an accuracy of the regere

c) Calculate residuals of the model

d) At a level of significance 5% test a statistical significance of regression coefficients

e) Write down an 95% confidence interval for regression coeficient $b_1$?

f) What is an expected production in the case of an investment of 20.5K CZK (20.5 th

| Year | x | y |
|------|-------|------|
| 1 | 16.3 | 44.4 |
| 2 | 16.8 | 48.4 |
| 3 | 18.5 | 54.2 |
| 4 | 16.42 | 50 |
| 5 | 17.9 | 54.9 |
| 6 | 17.4 | 53.9 |
| 7 | 15.7 | 47 |
| 8 | 16.2 | 52.4 |
| 9 | 17 | 53 |
| 10 | 16.7 | 52.9 |
| 11 | 17.5 | 53.1 |
| 12 | 19.1 | 62 |

ount of investment.

ssion function.

;

housand CZK) ?

In the table there are results of experiments of a new fertilizer on the production of tomatoe

a) Choose an appropriate type of a regression model describing dependence of production o
  is it appropriate to use a linear function, or a quadratic function?
b) Determine an equation of a regression function
c) By using of the coefficient of determinarion R2 evaluate an accuracy of the regeression fu
d) Find an optimal level of fertilizer

| Fertilizer (100 kg/ha) (x) | 0.7 | 1.3 | 3.8 | 4.2 | 2.5 | 5 |
|---|---|---|---|---|---|---|
| Production (t/ha)  (y) | 12 | 14.6 | 40.3 | 43.7 | 28 | 45 |

es.

ɔn an amount of fertilizer

nction.

| 5.3 | 6 | 5.8 | 6.2 |
|------|------|------|------|
| 41.7 | 39 | 35.4 | 29.6 |

Choose an appropriate type of a regression model describing dependence of savings on an incor
a) Estimate linear regression model
a) Estimate quadratic regression model
c) Estimate exponencial regression model
d) Estimate  powered regression model
e) Estimate logaritmic regression model
f) which of models a)-e) discrabes the situation most precisely and why?

| Income (in 1000 CZK) (x) | Savings  (in 1000 CZK) (y) |
| --- | --- |
| 104 | 6 |
| 125 | 5.6 |
| 146 | 9.2 |
| 167 | 14 |
| 111 | 8 |
| 135 | 9.1 |
| 189 | 20.5 |
| 196 | 29 |
| 205 | 23.2 |
| 210 | 38.5 |
| 170 | 25 |
| 230 | 40 |

me.